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ABSTRACT

This book focuses on how to make math friendly for parents and children. The book has a companion audiotape with ideas and guidelines for the interested parent. The book's introduction also suggests some ways for parents to guide their children's reading. Part 1 of the book consists of three "Read-along Stories": "Turkey Tallies" (Lou Hamilton and Dave Coverly); "Paul Bunyan versus the Conveyor Belt" (William Hazlett Upson); and "Makanda Mahlanu (Josepha Sherman). Part 2 deals with learning math at home. It contains the following sections: Guidelines for Parents; Friendly Math; Questions about Math; Math Activities; Help Your Children with Math Skills; and Books for Parents and Children. Most of the books listed are for children between the ages of 4 and 10 years old and are divided into books to read together, books for children to read by themselves, and magazines. (NKA)

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Parents and Children Together SERIES

ED 456 455

# LEARNING MATH AT HOME

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## PLUS

## Read-along Stories:

**Turkey Tallies**

**Paul Bunyan versus the Conveyor Belt**

**Makanda Mahlanu**

CS 217 701

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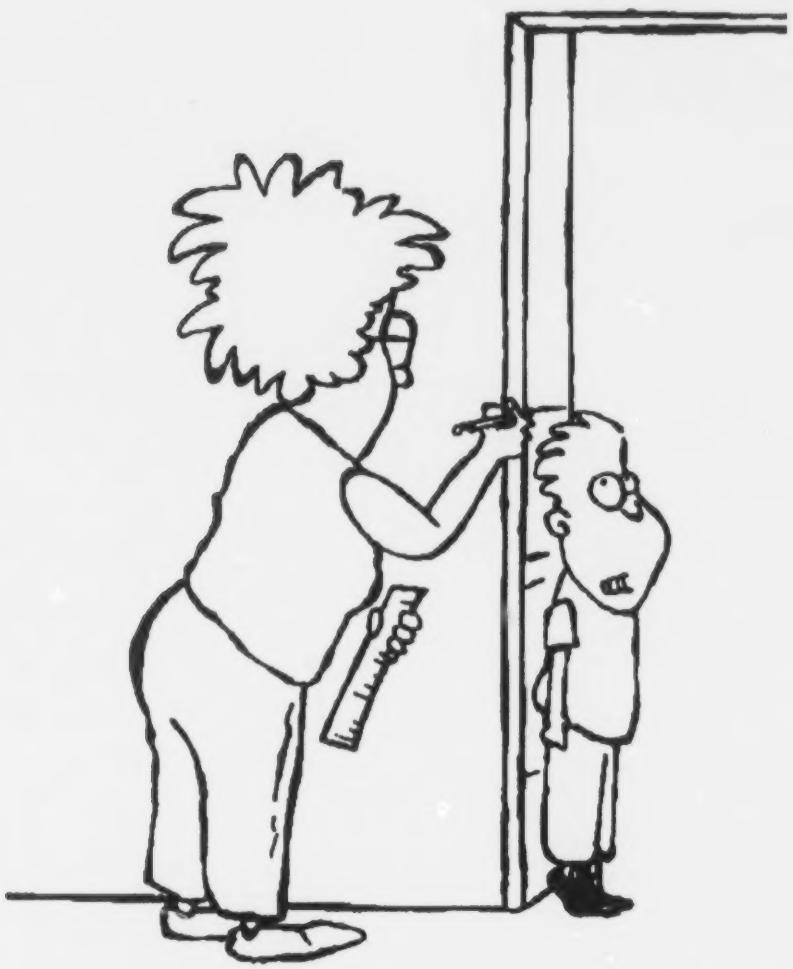
## Guidance and fun for parents and children, ages 4–9

This book has a companion audio tape also entitled "Learning Math at Home." Occasionally there are directions on the tape that do not appear in the book or headings in the book that aren't spoken on the tape.



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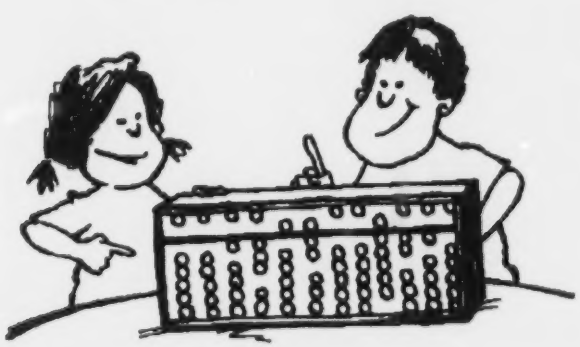

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# Introduction

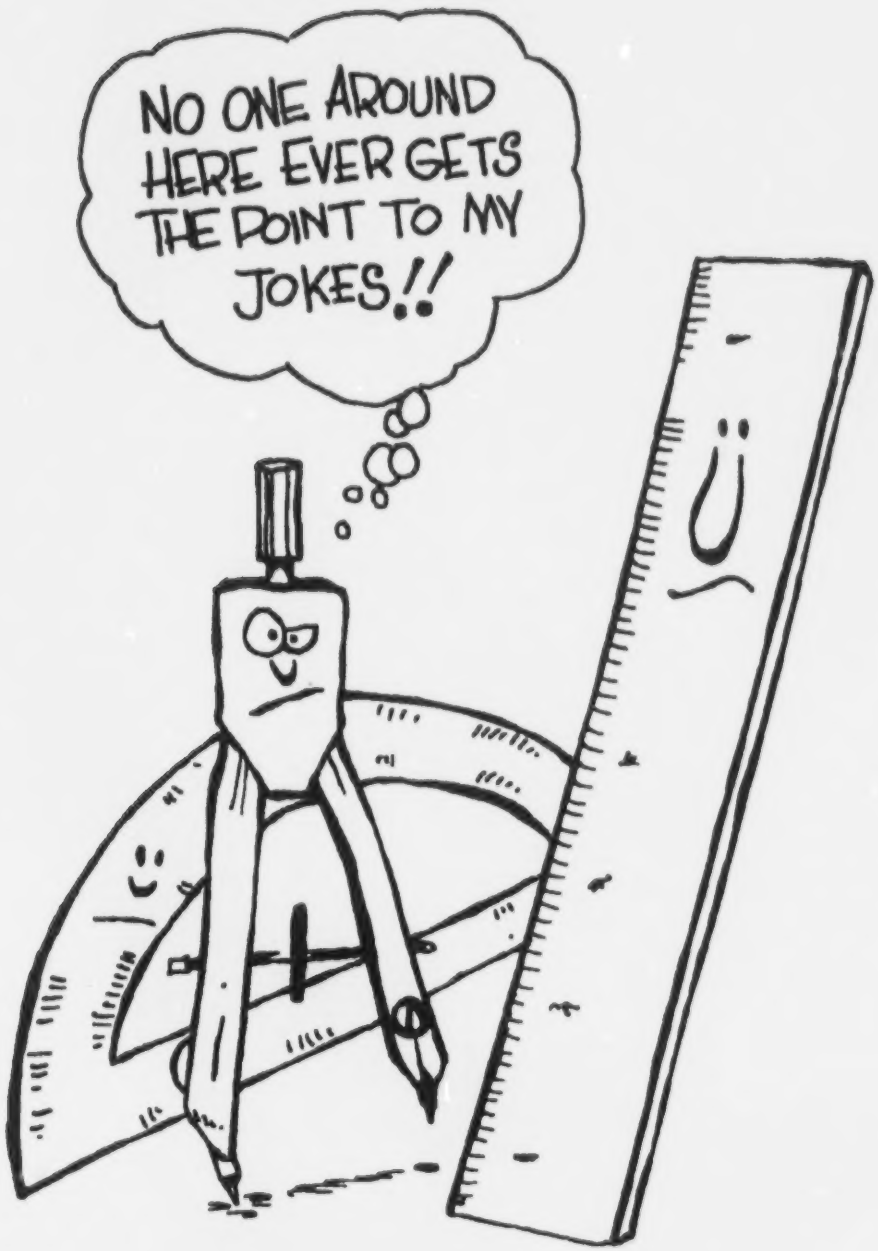
Get together with your children. Talk about stories and learn together. That's the message of this series of books, ***Parents and Children Together.***

You will find here several stories that you and your children can read together and talk about in a relaxed way. Some stories are more appropriate for younger children, some for children in grades three and four. Have fun with them but also use them as a way of guiding your child's thinking.

Before each story, you will be prompted to focus your attention. After the story, review some of the issues in a relaxed conversation. Please feel comfortable making comments or asking questions when the two of you are reading a story together. Have fun along the way. The stories are performed as radio dramas on the accompanying audiotape. This gives your child a chance to read along with the voices on the tape.

In the second half of this book and on one side of the audiotape, there are ideas and guidelines for the interested parent. On the topic of this particular volume you will find hints, practice activities, and books for further reading. If you want to use the tape as a way of preparing to read with your child or to help your child study, the tape gives you an opportunity to listen while you are driving or jogging.

For more ideas on any of the topics in this Series, visit ***www.kidscanlearn.com*** or ***http://eric.indiana.edu***


NO ONE AROUND HERE EVER GETS THE POINT TO MY JOKES!!

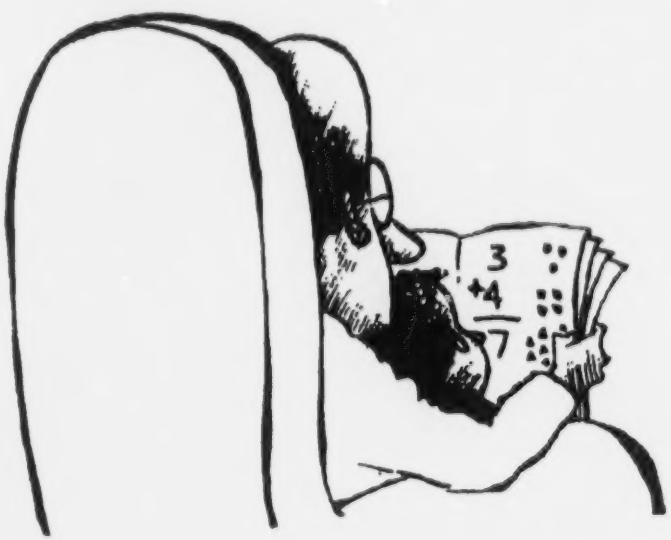
# Getting Started

In this book we focus on how to make math friendly for you and your children.

On side B of the tape are three read-along stories. We encourage you to listen to these stories and to read them with your children so that they can participate in the excitement of story reading. Of course, your child can also listen to the stories alone, if you wish.

You may want to take some time to look ahead at these stories before you read with your child. It is also important to talk about them ahead of time.

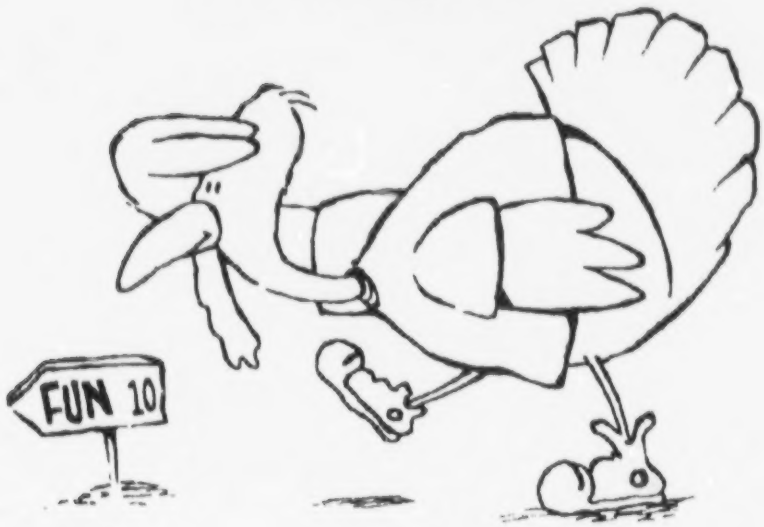
> Before you read the story, talk about the title or things that might happen in it. Then, after you have finished reading, talk about what happened in the story. By the way, if in the middle of the story something funny or interesting happens, it's okay to stop the tape and discuss the event, or ask your child questions such as, "Have you ever seen a Moebius strip?" or "Why do you suppose the older sister in this story is so mean?" These questions make your conversations about the story more meaningful and more valuable.



# Part I
# Read-along Stories

# TURKEY TALLIES

by LOU HAMILTON
& DAVE COVERLY




1 BABY TURKEY
LOOKING FOR SOME FUN.

2 EAGER TURKEYS
SAY, "C'MON, LET'S RUN!"

3 SKINNY TURKEYS
JUMPING ALL AROUND.

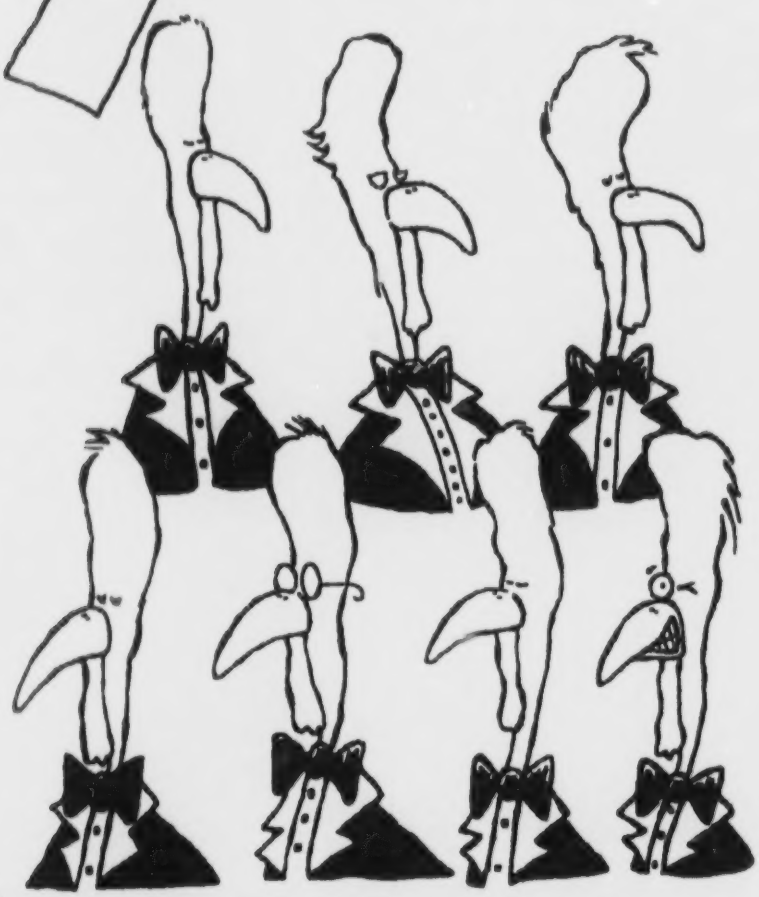
4 SILLY TURKEYS ROLLING ON THE GROUND.

5 HAPPY TURKEYS DRESSED LIKE CLOWNS.

6 Grouchy Turkeys

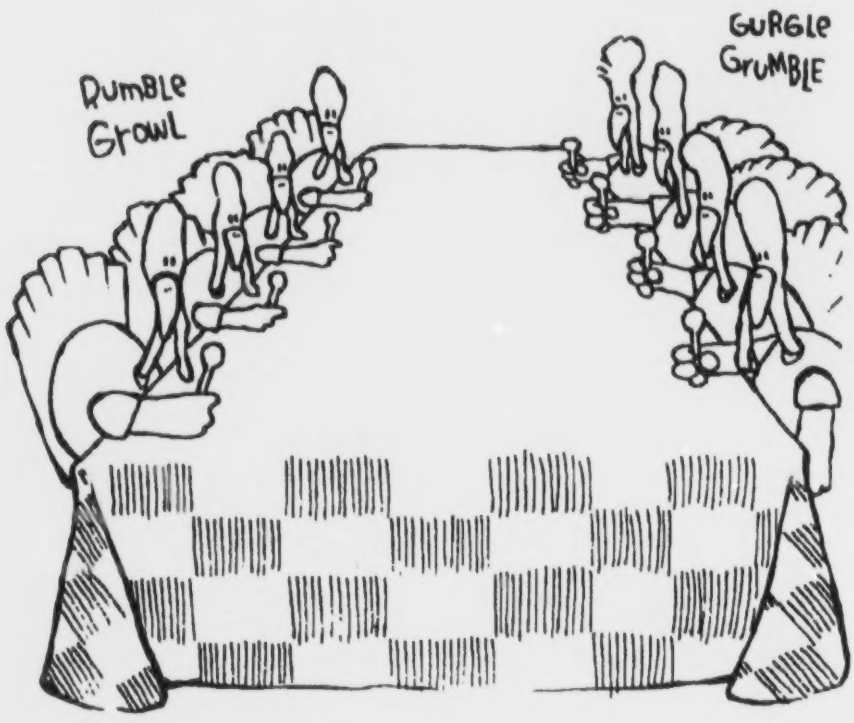
wearing BIG frowns.

# 7 Handsome Turkeys

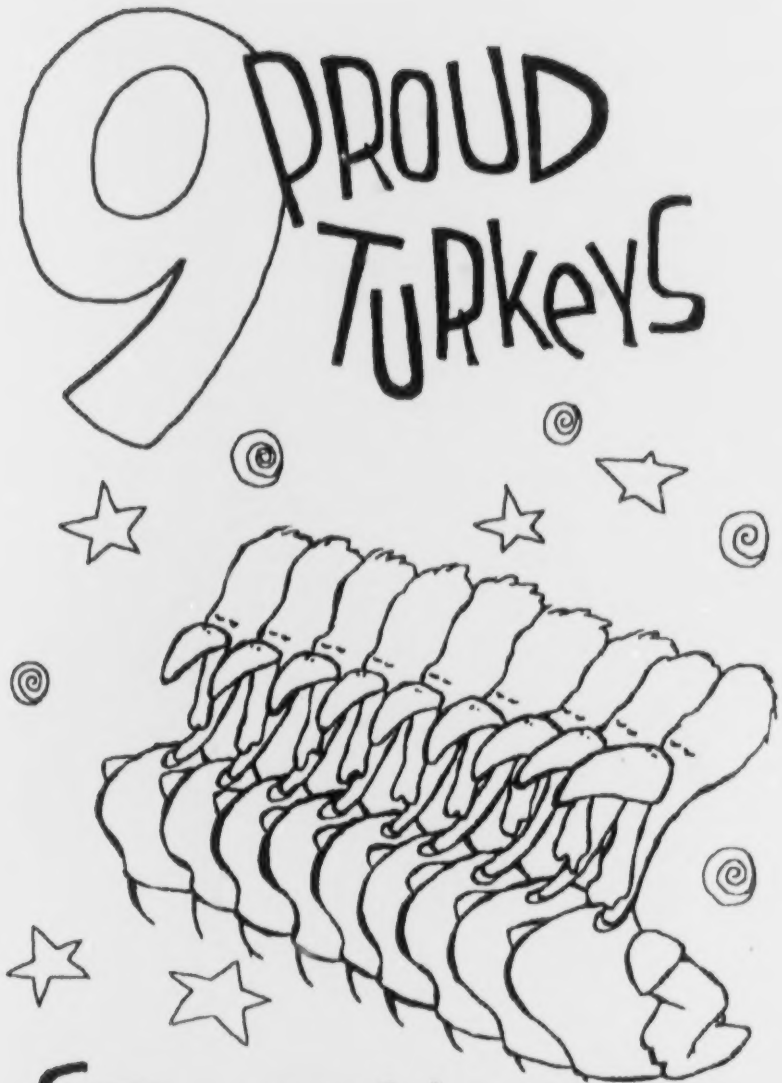


Looking So Fine.

# 8 HUNGRY TURKEYS

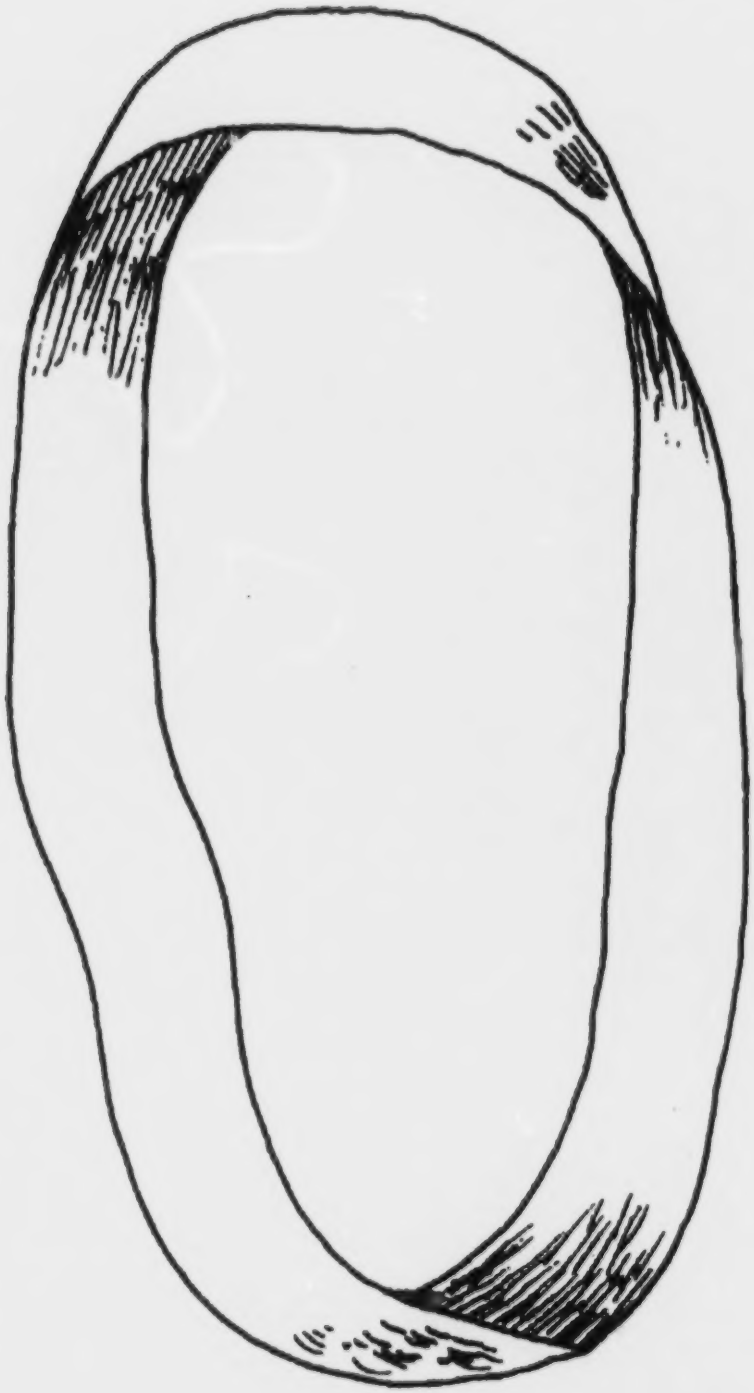



# READY TO DINE.


9 PROUD TURKEYS
STRUTTING THEIR STUFF.

# 10 TiReD TurkeyS SaY,

# "EnOuGh is EnOugH!"



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# Paul Bunyan versus the Conveyor Belt

*by William Hazlett Upson*

**Things to do *before* reading the story**

Get a long, thin strip of paper, some tape or glue, and a pair of scissors. Stretch out the piece of paper, then twist it once. Then tape or glue the ends of the paper together. Be careful not to lose the twist. This should give you a loop with just one twist in it. This is called a Moebius strip. Now, with a pair of scissors, begin to cut your Moebius strip down the middle...and see what happens! Read the story and see how Paul Bunyan used the mysterious Moebius strip to foil his foe, Loud Mouth Johnson.

One of Paul Bunyan's most brilliant successes came about not because of brilliant thinking, but because of Paul's caution and carefulness. This was the famous affair of the conveyor belt.

Paul and his mechanic, Ford Fordsen, had started to work a uranium mine in Colorado. The ore was brought out on an endless belt that ran half a mile going into the mine and another half-mile

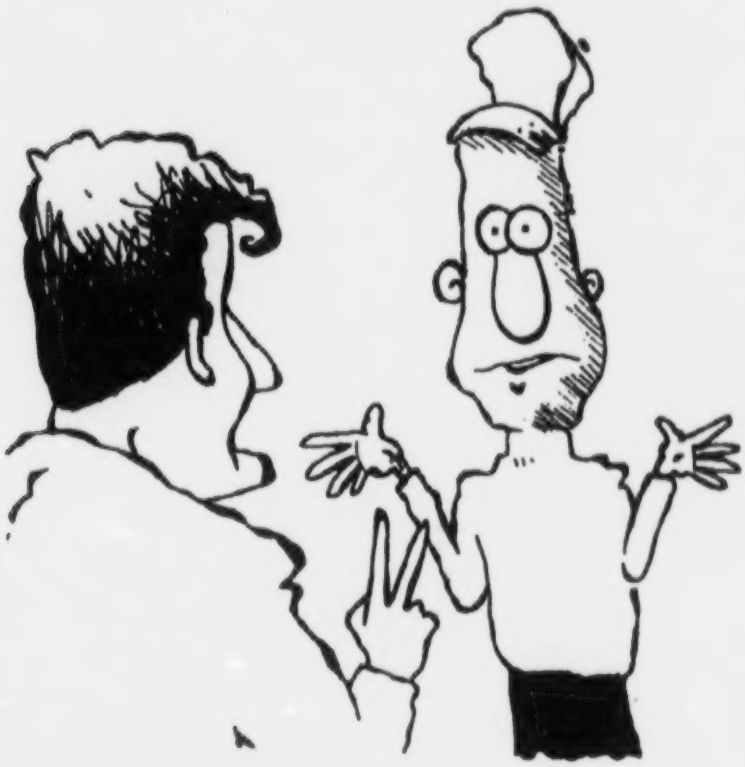
coming out—giving it a total length of one mile. It was four feet wide. It ran on a series of rollers and was driven by a pulley mounted on the transmission of Paul's big, blue truck, "Babe." The manufacturers of the belt had made it all in one piece, without any splice or lacing, and they had put a half-twist in the return part so that the wear would be the same on both sides.

After several months' operation, the mine gallery had become twice as long, but the amount of material coming out was less. Paul decided he needed a belt twice as long and half as wide. He told Ford Fordsen to take his chainsaw and cut the belt in two lengthwise.

"That will give us two belts," said Ford Fordsen. "We'll have to cut them in two crosswise and splice them together. That means I'll have to go to town and buy the materials for two splices."

"No," said Paul. "This belt has a half-twist—which makes it what is known in geometry as a Moebius strip."

"What difference does that make?" asked Ford Fordsen.



"A Moebius strip," said Paul Bunyan, "has only one side and one edge, and if we cut it in two lengthwise, it will still be in one piece. We'll have one belt twice as long and half as wide."

"How can you cut something in two and have it still in one piece?" asked Ford Fordsen.

Paul was modest. He was never opinionated. "Let's try this thing out," he said.

They went into Paul's office. Paul took a strip of gummed paper about two inches wide and a yard long. He laid it on his desk with the gummed side up. He lifted the two ends and brought them

together in front of him, with the gummed sides down. Then he turned one of the ends over, licked it, slid it under the other end, and stuck the two gummed sides together. He had made himself an endless paper belt with a half-twist in it, just like the big belt on the conveyor.

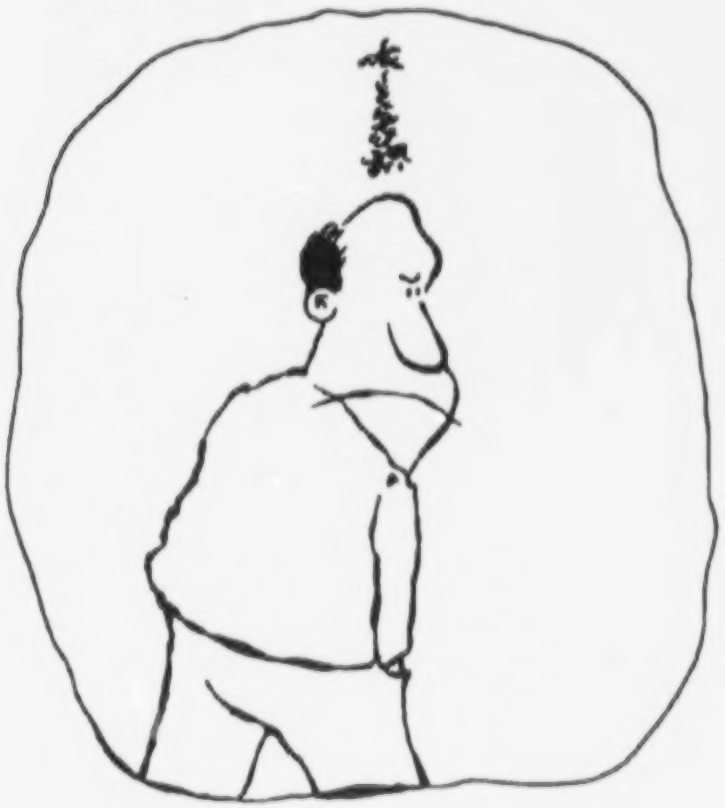
"This," said Paul, "is a Moebius strip. It will perform just the way I said—I hope."

Paul took a pair of scissors, dug the point in the center of the paper, and cut the paper strip in two lengthwise. And when he had finished, sure enough, he had one strip twice as long, half as wide, and with a double twist in it.

Ford Fordsen was convinced. He went out and started butting the big belt in two. And, at this point, a man called Loud Mouth Johnson arrived to see how Paul's enterprise was coming along and to offer any destructive criticism that might occur to him. Loud Mouth Johnson, being Public Blow-Hard Number One, found plenty to find fault with.

"If you cut that belt in two lengthwise, you will end up with two belts, each the same length as the original belt, but only half as wide."

"No," said Ford Fordsen, "this is a very special belt known as a Moebius strip. If I cut it in two lengthwise, I will end up with one belt twice as long and half as wide."



"Want to bet?" asked Loud Mouth Johnson.

"Sure," said Ford Fordsen.

They bet a thousand dollars. And, of course, Ford Fordsen won. Loud Mouth Johnson was so astounded that he slunk off and stayed away for six months. When he finally came back, he found Paul Bunyan just starting to cut the belt in two lengthwise for the second time.

"What's the idea?" asked Loud Mouth Johnson.

Paul Bunyan said, "The tunnel has progressed much further and the material coming out is not as bulky as it was. So I am lengthening the belt again and making it narrower."

"Where is Ford Fordsen?"

Paul Bunyan said, "I have sent him to town to get some material to splice the belt. When I get through cutting it in two lengthwise, I will have two belts of the same length but only half the width of this one. So I will have to do some splicing."

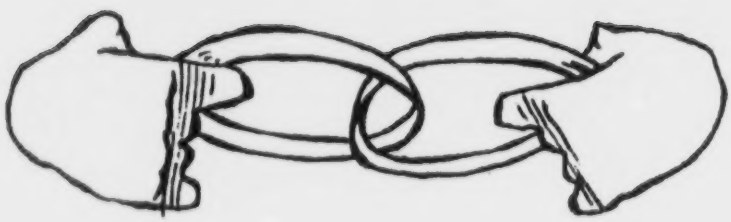
Loud Mouth Johnson could hardly believe his ears. Here was a chance to get his thousand dollars back and show up Paul Bunyan as a boob besides. "Listen," said Loud Mouth Johnson, "when you get through, you will have only one belt twice as long and half as wide."

"Want to bet?"

"Sure."

So they bet a thousand dollars and, of course, Loud Mouth Johnson lost again. It wasn't so much that Paul Bunyan was brilliant. It was just that he was methodical. He had tried it out with that strip of gummed paper, and he knew that the second time you slice a Moebius strip you get two pieces—linked together like an old-fashioned watch chain.

A mathematician confided
That a Moebius band is one-sided.
And you'll get quite a laugh
If you cut one in half,
For it stays in one piece when divided.



**Things to do *after* reading the story.**
In the original story, Paul is a giant lumberjack and "Babe" is his ox. Draw a picture of them.

# Makanda Mahlanu

*A Bantu Folk Tale from Africa*
*by Josepha Sherman*

**Things to do *before* reading the story**
Write the title of this story in a vertical column so there is one letter per line. Think of words beginning with these letters that are related to Africa in some way.

Once, long ago, there lived a poor man with two daughters. Zikazi, the elder, was very beautiful, *wau*, but she was also proud and lazy. Zanyana, the younger daughter, was beautiful too, but unlike her sister, she was kind and sensible.

One day a messenger came to the poor man's little mud hut. "The great chief Makanda Mahlanu wishes to wed one of your daughters."

"But—but no one has ever seen the great chief!" the poor man protested. "No one even knows what he looks like."

"Wed one of us?" wondered Zanyana. "Which one?"

"Why, me, of course!" cried haughty Zikazi. "I am older and more beautiful. The great chief shall wed me."

So off Zikazi went to the village of Makanda Mahlanu. On the way she met a mouse, which sat up on its hind legs and said in its tiny voice, "Shall I show you the way?"

"How dare a silly little mouse speak to me?" cried Zikazi. "Go away!"

The mouse ran away. Zikazi went on. But the path grew so narrow and so full of thorns that her leather dress was soon sadly torn, and her face and arms all scratched. As she struggled on, she met a frog. It croaked at her and said, "Shall I give you a warning?"

"How dare a slimy frog speak to me?" cried Zikazi. "Go away!"

The frog hopped off. But as it hopped, it called to Zikazi, "Foolish girl, I'll warn you anyway: When the trees laugh at you, don't laugh back at them!"

Zikazi thought that was nonsense. But just then the trees did start to laugh at her, shaking their branches in glee! "How dare you laugh at me?" cried Zikazi. "You—you silly twigs!" And she started to laugh back at them and mock them.

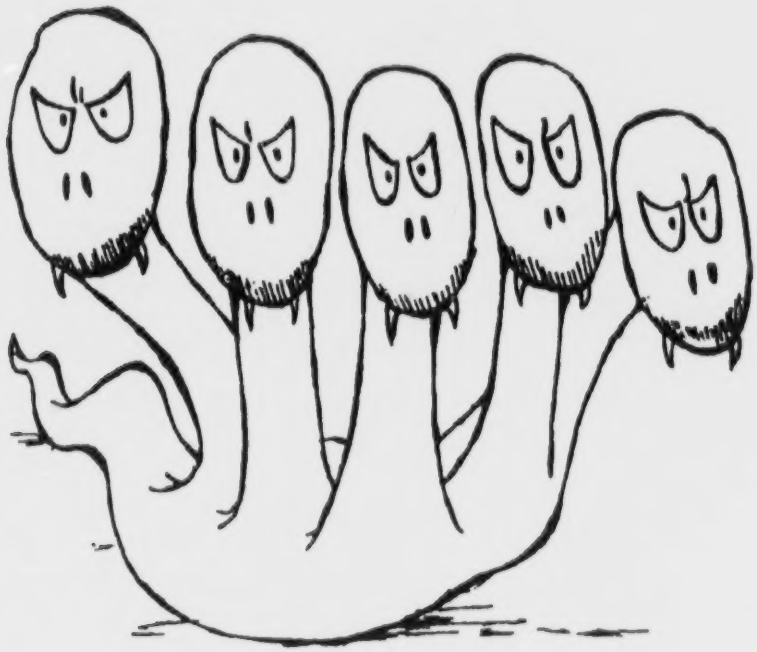
"Be wary, Zikazi," came a whispery voice, like the stirring of wind through leaves. "You did not listen to the Mouse and Frog when they tried to help you. Foolish girl! You have but one chance left. Grind the millet well. Fear nothing you see."

"What foolishness," said Zikazi, and she went on her way.

When she came to the village of the great chief, with all its huts and herds and people, she went right up the bridal hut. There the servants of Makanda Mahlanu gave her millet seed to grind into a bridal cake. But Zikazi was such a lazy thing! She ground the seed only once, and the bridal cake was hard and lumpy as rock.

Zikazi didn't care. "Let me see my husband," she said.

There came a slithering. There came a shivering. Suddenly Makanda Mahlanu was before her—and he was a monster! He was a huge snake



with five staring heads! Zikazi forgot the warnings of the trees. She ran away in fear, all the way back to her father's hut. There, scratched and shaking and dirty, she sobbed, "He's a monster! Makanda Mahlanu is a monster!"

But Zanyana thought to herself, "I wonder." "Now it is my turn," she told her father, and—though he tried to stop her—Zanyana set out for the village of the great chief. She hadn't gone far when the mouse sat up on its hind legs and asked her, "Shall I show you the way?"

"Yes, kind mouse, please do."

So the mouse led her to a broad, smooth path. Not a pebble bruised her feet, not a thorn tore her dress.

She came to the frog, who called up, "Shall I give you a warning?"

"Yes, kind frog, please do."

So the frog warned her, "When the trees laugh at you, don't laugh back at them."

The trees laughed. Zanyana only smiled. "I guess a human being does look funny to you," she called up to them.

"Grind the millet well," said the whispery voice. "Fear nothing you see."

Zanyana nodded and went on. Soon she reached the village of the great chief. When she entered the bridal hut, the servants put the millet seed before her for the bridal cake. Zanyana ground it once, she ground it twice, she ground it so well that the cake was smooth and fine and soft.

"Now," she asked softly, "may I see my husband-to-be?"

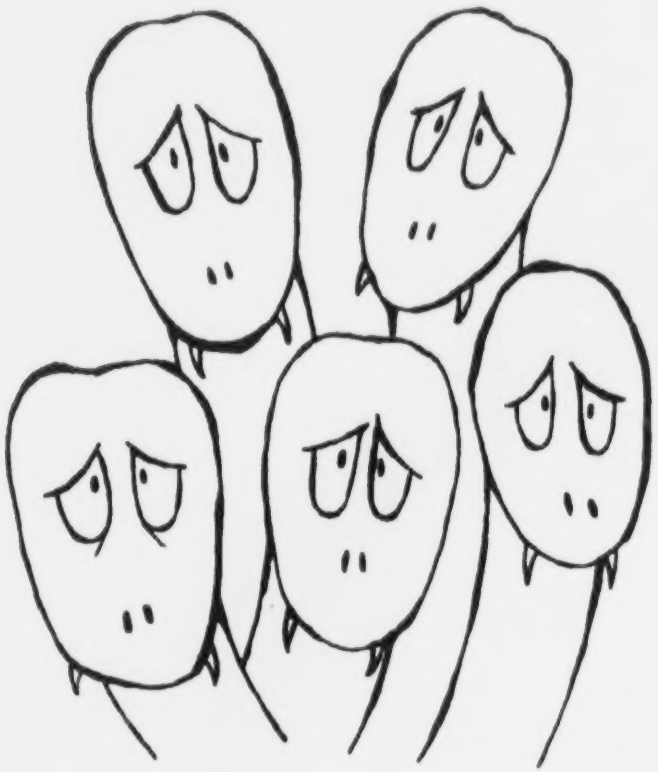
There came a slither, there came a shudder, and Makanda Mahlanu, the terrible five-headed snake, entered the hut. Zanyana gasped. But then she remembered that the trees had told her: "Fear nothing you see."

So she merely bowed politely before Makanda Mahlanu and said, "Husband-to-be, I am here."

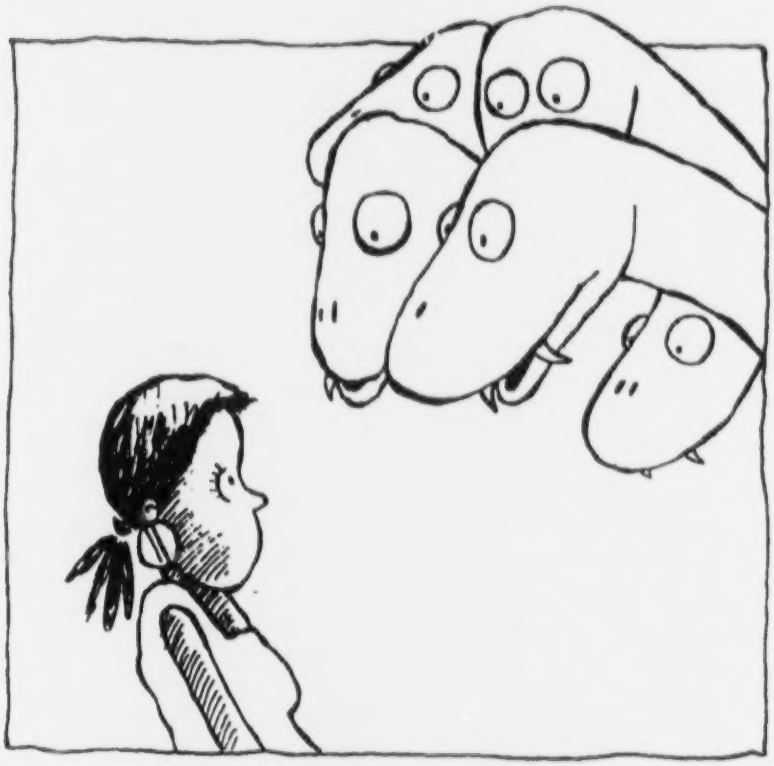
"You do not fear me?"

The snake's voice was cool as water, but sad, so sad! Zanyana looked up and, *wau*, his eyes were sad, too! But there was a hint of hope and a shining of such kindness in them that her heart sang with surprise. "Oh no," Zanyana said softly, "I don't fear you. I—I pity you."

"How can you pity me? I am so ugly!"



"Maybe the outer Makanda Mahlanu is a monster. But I think that the inner Makanda Mahlanu is not ugly at all."



The snake reared up his five terrible heads before her. "Could you like him?"

"Yes, I think I could."

"Could you...love him?"

Love a monstrous snake? Zanyana fought not to shiver. But his eyes were still so very sad, as though he expected her to run away in terror, just like Zikazi. Why, how lonely he must be! How could she ever be cruel enough to run away from this poor, unhappy being?

"Yes," Zanyana said firmly. "I could love him."

Makanda Mahlanu gave a great cry. His snake-form shook and shook till the walls of the hut cracked and nearly fell. Zanyana covered her eyes to protect them from the bits of flying mud and straw. But when she looked up again—the terrible five-headed snake was gone. In his place stood a tall, young man, so handsome and warm of eye that Zanyana's heart sang anew.

"I am Makanda Mahlanu," he said, and his voice was no longer sad. "Once I chased an evil wizard away from my people. In his anger, he cast a spell upon me: I should be a monstrous snake till the day someone should dare to love me. You've broken the spell, Zanyana! By your bravery and kindness, you have freed me." He laughed for joy. "You said you could love me when I wore a monster's shape. Can you love me now, my brave Zanyana? Will you be my wife?"

"I will," Zanyana said happily. "Oh, I will, indeed!" So it was. And they lived together in peace and joy.

**Things to do *after* reading the story**

How do you think Zikazi might have changed after she found out what happened to her sister, Zanyana?

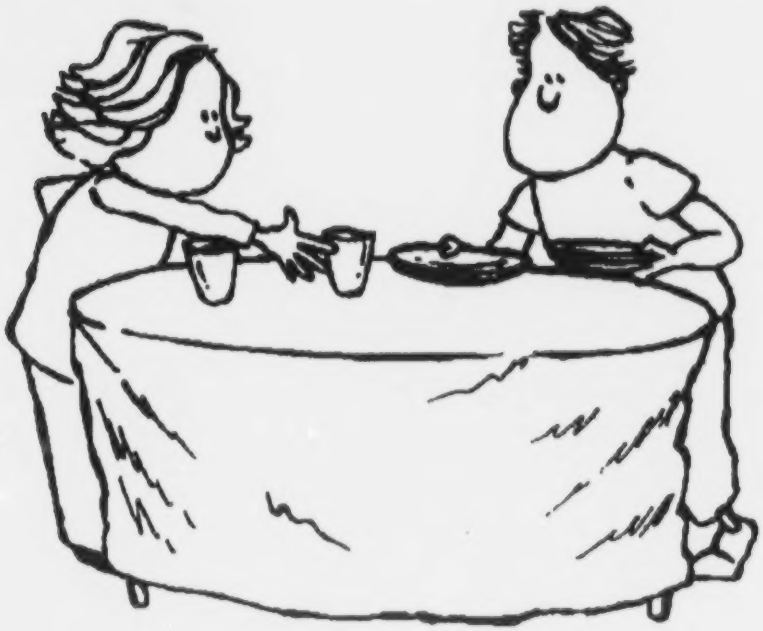
# We hope you have had fun with these stories!

# Part II
# Guidelines for Parents

# Friendly Math

Recently we had to build some storage shelves at work to hold the boxes of books and paper that were cluttering our work space. So we measured the wall where the shelves would be placed, and then figured out how much lumber we would need. After that, we called the lumber yard to estimate the cost of our project. All that measuring, figuring, and estimating were parts of a real-life math problem. We all do those kinds of math problems every day.

Though often feared by students, math is probably our most frequently used school subject. We solve math problems when we ask: "How many are going to eat lunch? How many bowls do we need? Spoons?



Susie is having milk . . . Dad, coffee . . . Mom and Jake, water." We use math skills when we:

- ☑ Note likenesses and differences.
- ☑ Ask questions like, "Can you find a spoon like this one?" or "Can you locate the sweater with the square neck?"
- ☑ Estimate the time it will take to finish homework.

Think for a moment about the routine things that involve math:

- ☑ Setting the alarm to get up at a specified time.
- ☑ Measuring coffee for breakfast.
- ☑ Leaving for the bus with enough time to reach the bus stop.
- ☑ Sorting the laundry into piles, measuring detergent, setting the dials on the washer and dryer, and folding the clothes.

- ☑ Cooking meals.
- ☑ Paying bills.
- ☑ Using sales coupons.
- ☑ Discussing the family budget.
- ☑ Making phone calls.

So don't let anyone tell you or your child that math is too difficult for you. You do it all the time.

At home, then, you can help your child build self-confidence by making her aware of the math all around her. You can also help her see the relation between everyday math activities and school learning. There are three basic things you can do:

**First,** help your child understand the problem. Remember the shelves we built? We could estimate the cost and order the lumber only after we measured the wall and figured out how much lumber those shelves required. In other words, we had to visualize the problem and lay it out, step by step.

**Second,** help your child practice the base skills—addition, subtraction, multiplication, division, fractions, and decimals—so that he or she can remember them and use them correctly.

**Third,** help your child see patterns. Children need to see patterns in math and ways of organizing mathematical information. That's the great value of trying to put some information into an equation. The equals sign (=) helps children see the pattern of thinking that enables one side of the equation to match the other.

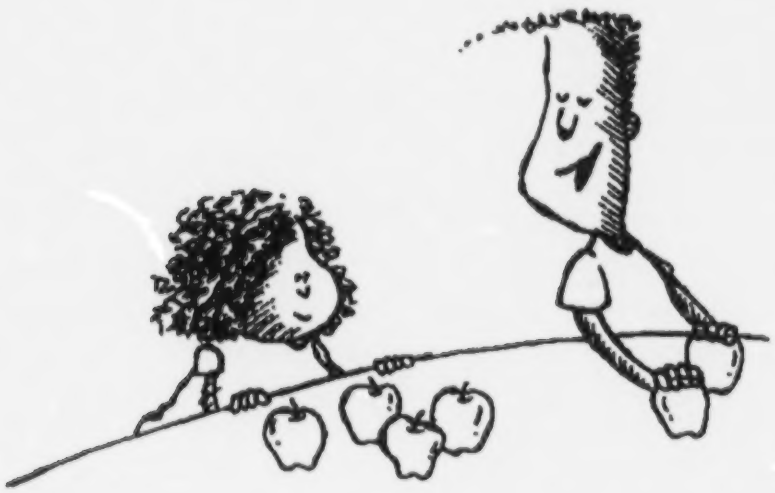
## Problem Solving

In recent years, problem solving has been emphasized in mathematics instruction. One study suggests that early childhood is a critical time for getting a child ready for problem solving. Children can profit from activities that encourage them to explore their environment mathematically and to build a network that promotes problem solving.

Problem-solving strategies parents can use to help their children understand math include:

- ☑ Rereading the problem.
- ☑ Looking for key words and ideas.
- ☑ Solving a similar (but easier) problem first.

- ☑ Writing down important information.
- ☑ Making a list, table, or chart to organize the information
- ☑ Using a picture or objects to make the problem more real.



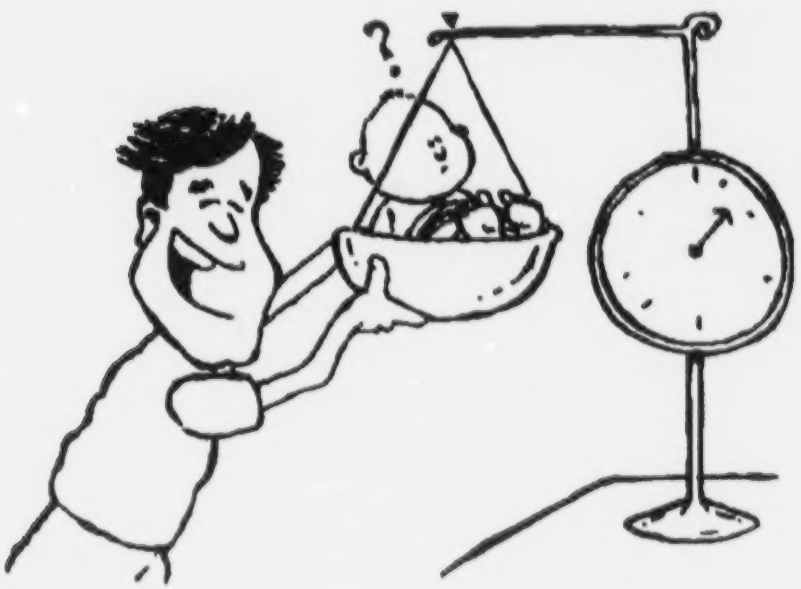
You might be interested in some other basic skill areas that have been identified by the National Council of Supervisors of Mathematics:

1. **Being aware of the "reasonableness" or logic of results.**

Children should learn to evaluate or inspect their results and check for reasonableness. If they were asked to find one-third of the length of a bedroom, and their answer was 75 feet, is that a reasonable answer? Because calculators are now cheaper and more readily available, this skill is all the more important.

**2. Estimating answers.**

Children should be encouraged to estimate some answers. They should acquire some simple techniques for estimating quantity, length, distance, weight, and so on. You can help your children by asking them to estimate room size, distance across your yard, or the weight of their



baby brother. Children who can estimate are able to reject unreasonable answers to a problem and know when they are "in the ballpark."

**3. Geometry.**

Children should learn the geometric concepts—shapes, differences, parallels, perpendicular, line, point, and so on. These properties relate to measurement and problem-solving skills. Children must be able to recognize similarities and differences among objects.

**4. Measurement.**

Children should be able to measure distance, weight, time, capacity, and temperature. Children should be aware of measurement in both metric and standard systems, and should use the appropriate tools.

**5. Reading, interpreting, and constructing tables, charts, and graphs.**

Children should understand time schedules, weather reports, and wage and income tables, which are all part of our daily lives.

**6. Using math to predict.**

Children should become familiar with how math is used to help make predictions. This is called probability. What's the probability that tomorrow Mom will say, "OK, Henry, its time to get up for school"? Well, how often has she said it in the past? Every day? Then the probability is 100% that she will say it tomorrow.

**7. Computer literacy.**

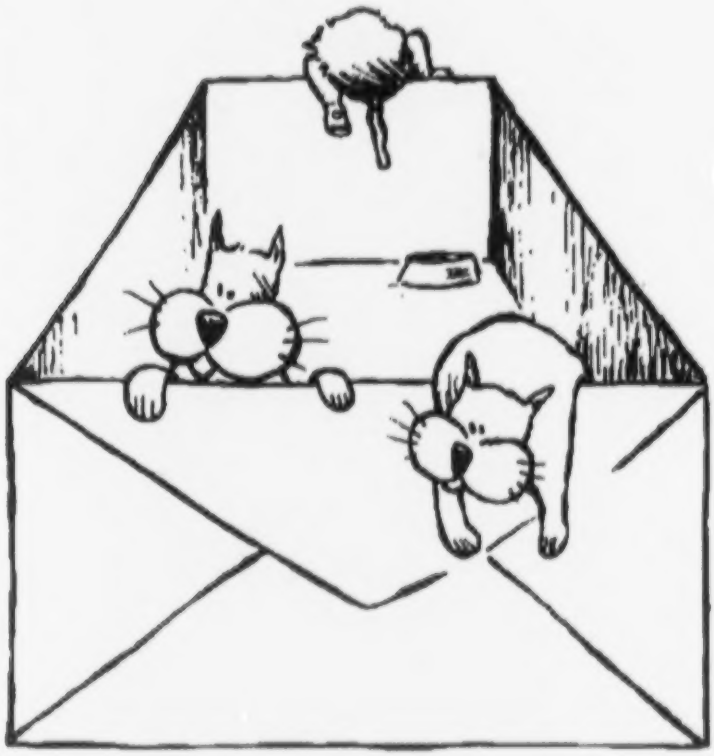
Children should be aware of the many uses of computers in society. Encourage your child to take advantage of computer learning at school and at home, if you can afford one there.

# What Can Parents Do?

As is the case with all school learning, parents can be valuable assets in helping their children develop math skills. The easiest and most direct way is just to talk about the math activities that occur daily. We have listed many of them in this section. Encourage your children to explore and to show their curiosity by asking questions like: How many pieces of candy do you think are in that dish?

How can we measure the size of the ball without using a tape measure? How many pieces of paper will we need to wrap that big box?

When parents provide the materials and let the child do the activity, they encourage him or her to take risks as a thinker. Learning math at home begins with something the child can touch and feel, like pennies and nickels, or a dark box full of newborn kittens, or storage boxes that have to stack



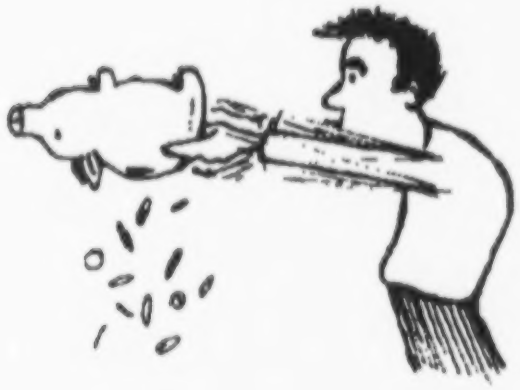
precisely in order to all fit on the shelf. As the child realizes that math is used all around him, math may then make better sense in school and elsewhere. Please remember that math begins with the concrete experience. With sticks and blocks and measuring tape, your child will learn to handle math and feel comfortable with it.

# Questions about Math

Math is a subject children need help with, and often parents are anxious or intimidated by this topic. Here are answers to some questions that will enable you to help your kids.

> Our child has difficulty understanding money and making change. Do you have any suggestions for motivating him to learn this?

Many families put extra change in a jar or container. If you have extra change or your child has money in his piggy bank, bring it out and let him use real money to practice making change. For example, ask your child to sort the change or coins into groups that equal a dollar; then count the groups. Remind him that this can be done by using what he already knows—counting by twos, fives, and tens.



Start out with simple sorting tasks, such as counting out enough dimes, quarters, or nickels to equal a dollar. Not only does this help your child learn how many dimes, quarters, or nickels equal a dollar, but it enables him to understand the value of each coin a little better. Once your son understands the value of coins and paper money, then you can move on to problems and activities that involve counting out the correct amount of money or making change.

It is unreasonable to expect your son to do these calculations in his head right away. Adults who are dealing with money every day don't even do it—they use calculators and computer cash registers for that! When you give your son money problems at home, give him some paper and pencil to figure out the problem. Then ask him to count out the right amount of change.

As your son becomes more skilled at working with money, try challenging him. When you are shopping, ask him how much the two or three items you have in your shopping cart will cost. Have him add up the coupons you are going to use and tell you how much money will be saved. When shopping, or at a fast-food restaurant, ask your son to tell you how much change you should get back from the cashier. If your son gives the right answer, he gets to keep the coins!

> I'm not good at math. I want our child, who isn't in school yet, to have a good attitude about math. What can I do with her before she gets to school to help avoid some of the problems and bad feelings I have about math?

Math plays a very important role in today's world of advanced technology. As a parent, you can help your child master the subject of mathematics. Even at a very early age, your child is able to use simple mathematical ideas, and you can increase her chances of success by providing suitable activities to develop these ideas.

Math is learned naturally by the inventive, curious mind. Pre-schoolers are easy and confident with numbers. They love to count and use counting in a number of ways. By the time they enter kindergarten, they have many practical—but informal—math skills. For example, they can deal comfortably with situations requiring an idea of what is largest, smallest, tallest, longest, inside, outside, closest, farthest, and the like. They can do simple addition and subtraction by counting and looking at actual objects—apples, pencils, books, and so forth. They can correctly count to 10.

Help your child learn to count by using rhymes such as "one, two, buckle my shoe, three, four, shut the door." Read books to your child that involve counting, such as, *Over In the Meadow* or *The Three Little Pigs*. When reading aloud to her, ask her how many people, dogs, or other objects she sees in the picture.

Turn simple jumping, clapping, and hopping activities into counting activities. When doing work around the home, have her count out the objects. For instance, while setting the table, have her count the plates, silverware, and napkins that are needed for dinner. Let her figure out how many potatoes you will need for supper, and then let her get them for you.

Make sure that "home" math has a noticeable problem-solving flavor. It should contain a challenge or question that can be answered. Ask your child how many pennies she has in her piggy bank. Have her take some away, and then ask her again how many she has. Don't make the problems difficult—start with small numbers and simple problems so she can gain confidence in handling numbers and solving problems.

Reward your child with praise for correct answers. This helps build the child's confidence in problem-solving. Don't tell your child that some people are "no good" at math. Never tell your child you are "no good" at math, no matter how low your opinion is of your own skills! And by all means, don't think that girls aren't as good at math as boys.

> I don't want to invest a lot of money in buying math things (games, flash cards, counters, beads, etc.) like they have at school. What can I use at home that will provide my children with the same math experiences?

You don't have to make an expensive investment to provide for stimulating math experiences at home. Use objects that your children can touch, handle, and move. Researchers call these things "manipulatives." You have all sorts of these "manipulatives" all around the house!

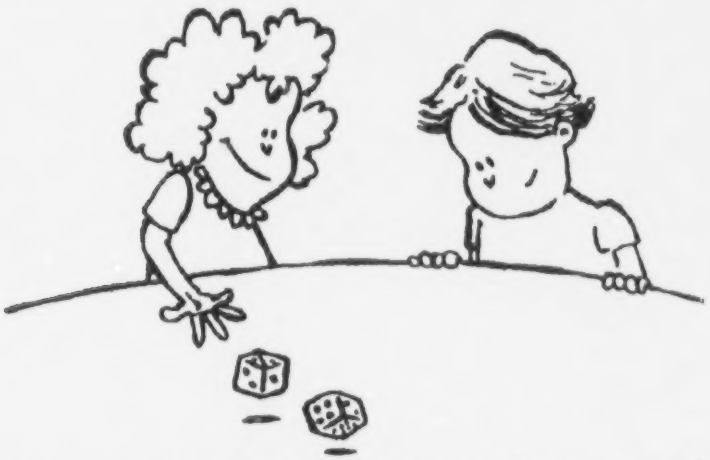
They include familiar objects such as the miniature figures, cars, marbles, and so forth that young children play with. Some children have collections of shells or baseball cards. Use these items to make story problems for your children to solve or use them as counters instead of counting toes and fingers! Snacks, such as popcorn, raisins,

M&M's, cereal, grapes, carrot sticks, and marshmallows make good things to count. And when you are done or get the problem right—you can eat them as a reward!

The plastic packaging called "peanuts" that many items are shipped in, old buttons, tooth picks, and paper clips also make great things to use for solving math problems. Store them in a place where your children can easily get to them.

Use old decks of cards for making your own set of flash cards. Write the basic facts on these old cards just as store-bought flash cards are designed. You can also cut up old birthday, Christmas, or greeting cards to make flash cards.

If you have dice around the house, use a pair of dice or several dice to practice math facts. Roll the dice and add them up. The one with highest or lowest score wins! If you don't have dice, you can



make your own. Get a small piece of wood and cut it into small blocks. Write a number on each side of the block and you are ready to roll!

Use your kitchen measuring cups and spoons to help with teaching fractions. Cutting apples, oranges, and other foods also helps to demonstrate fractions—what a half, a quarter, or one-third really looks like.

Tangrams are different geometric shapes that introduce your child to geometry. When teachers use tangrams at school, ask your child's teacher if you can borrow these shapes. You can make your own tangrams at home by tracing the shapes on a vinyl place mat and cutting them out. They are just as good as the purchased ones used by the teacher!

Let your children come up with some of their own ideas to use. Once you get an idea, the possibilities are endless.

# Math Activities

Help your child with math at home by using one or two of the following activities. Read through the ones listed below and select the appropriate ones to do with your children.

## Shapes

- Draw a circle, square, or triangle, or you can use yarn to make the figure. Show it to your child and introduce the name of the shape. Send your youngster on a search for items in the house that have the same shape.

## Sports Math

- Review word problems with your child by using the basketball scores in the paper. Example: 30 games played; 12 wins. How many losses? 20 wins and 7 losses. How many games played?

## How Far Is . . . ?

- Help your child estimate how long it would take to walk to a specified location. Then take the walk and determine if her predictions were correct.

## Let's Go $hopping

- Play a shopping game. First have your child select ten items from a catalog. Then have him add the prices to figure out the total cost of the items. Next, have him pretend he will receive a certain weekly allowance. Help him figure how long it would take to earn enough money to buy the selected items.

# Help Your Children with Math Skills

*Mary Ann Duke, a literacy teacher in Sarasota, Florida, sent us this story about Suzi and ways to use math around the home.*

In this day and age, everyone seems to be busy! So we want to spend our time wisely . . . especially when it comes to our children.

Suzi was a bright first grader who enjoyed being in the kitchen when she and her mother were home. Her mother knew that the kitchen was an excellent place to learn math and that a fun way to learn fractions was with measuring cups and measuring spoons. One thing Suzi's mother forgot to tell her, though, was that she had recently purchased a large measuring cup. It was a single container . . . but its capacity was two cups.

Suzi asked, "Mom, may I please make some jello?" Knowing that she had helped Suzi do this many times before, her mother felt Suzi was capable of doing this alone. But you can guess what happened. When the recipe called for two cups of water—two cups of hot water to dissolve the jello and two cups of cold water to set the jello—Suzi put

in two measuring cups of water each time . . . only it was really four cups of water each time! Needless to say, the jello was very runny.

Experiences like this one can be great learning opportunities, especially if the parent maintains a sense of humor and takes the time to explain to the child exactly what went wrong. Here is the perfect time to learn to read measurements.

If, for some reason, you had a dislike for math when you were in school, please don't pass on that attitude to your child. As Suzi's mother did, show your child that math is useful in his or her daily life.

Here are some other things you can do in the home to help your children become more successful in math at school.

Let them learn to set the timer on the stove. Have them calculate what time it will be 30 minutes from now when the cake is done. If the cake has to cool for 45 minutes before you put the icing on it, at what time will you begin to spread the icing?

Have your children use a measuring tape to find the perimeter of the various rooms when you are buying new carpet or tile. If your children know how to multiply, you can also teach them to find the area of the rooms by remembering the formula: Area = Length x Width. If you want to know the volume of your weekly trash, that formula is: Volume = Length x Width x Height. You can then determine how many cubic feet of trash you put out.

Talk about number facts or brain teasers with your children at the dinner table. For example, find books that contain amazing facts and figures, like the *Super Trivia Encyclopedia* or the *Guinness*

*Book of World Records*, and talk about how many earthquakes there are throughout the world every year (50,000) or how many participants the largest game of musical chairs had (6,003). Also let them make up story problems to try to "stump" you.

Remember, try to make math fun. If it's fun at home, your child will be more interested in math in school.

# Books for Parents and Children

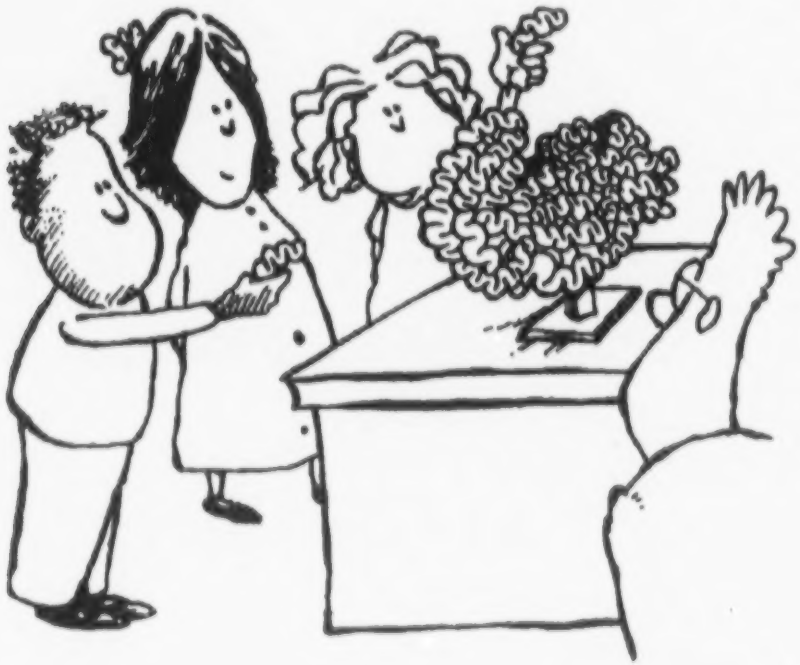
On the following pages, we have put together lists of books for parents and children. Several of the books contain problems to solve and games to play. We encourage you to take the time to read a few of these books, so that you can help your child have fun with math.

# Books for Parents

*Family Math* by Jean Kerr Stenmark, Virginia Thompson, and Ruth Cossey. Presents ideas to help children (ages 5–18) learn math at home. Includes hands-on materials that focus on logical reasoning, problem solving, geometry, statistics, calculators, money, time, spatial thinking, probability, and measurement.

*Math for Smarty Pants* by Marilyn Burns. Suggests activities and games that focus on everyday things to help children understand math. Covers geometry, logic, statistics, problem solving, and numeration.

*Brain Building* by Karl Albrecht. Teaches seven steps to help foster clear thinking in problem solving and logic. Gives examples of problems and how to solve them step by step. Also presents games and puzzles to enhance problem-solving skills.



*Help Your Child Learn Number Skills* by Frances Mosley and Susan Meredith. Shows parents how to explore math with their children through play. Gives practical math activities to do at home to help children with their math skills. Covers number skills, shape, measurement, calculators, computers, and mental arithmetic.

*Exploring Everyday Math: Ideas for Students, Teachers, and Parents* by Maja Apelman. Through the activities in this book, parents and teachers will discover many opportunities for helping children see mathematics as an important way of viewing and describing the world.

*Involving Families in School Mathematics: Readings from Teaching Children Mathematics, Mathematics Teaching in the Middle School, and Arithmetic Teacher*, edited by Douglas Edge. Explains ways to enhance math learning in home settings and describes opportunities for family participation in school settings.

*Beyond Facts & Flashcards: Exploring Math with Your Kids* by Jan Mokros. A book that shows parents how to transform the family's involvement in mathematics to help children see the big picture.

*Math for the Very Young: A Handbook of Activities for Parents and Teachers* edited by Lydia Polonsky. Provide activities for parents and primary grade children to explore together the myriad mathematical possibilities in the world around them.

*Count on Math: Activities for Small Hands and Lively Minds* by Pamela Schiller. Providing a guide for teachers and parents to teach math concepts to children sequentially, using everyday materials.

# Books to Read Together

## Ages 4-6

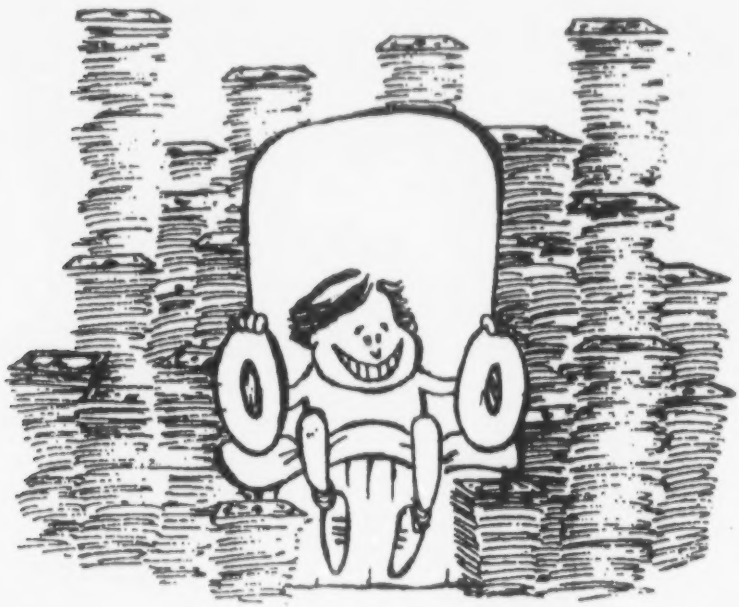
*Annie's One to Ten* by Annie Owen. Illustrates different combinations of numbers that add up to ten. Uses a variety of related objects to count. Includes zero.

*Shapes* by John J. Reiss. Presents a shape and then demonstrates familiar objects with that same shape. Creates new figures by manipulating basic ones. Shows squares, triangles, circles, cubes, pyramids, and spheres.

*The Magic Clock* by Roger Burrows. Jane finds a magic clock that takes her to different places each time she turns the hands. Relates what time it is in words to the face of the clock.

## Ages 6-8

*If You Made a Million* by David M. Schwartz. Describes the concepts of million, billion, and trillion by considering ways money can be spent. Delightful illustrations accompany text.

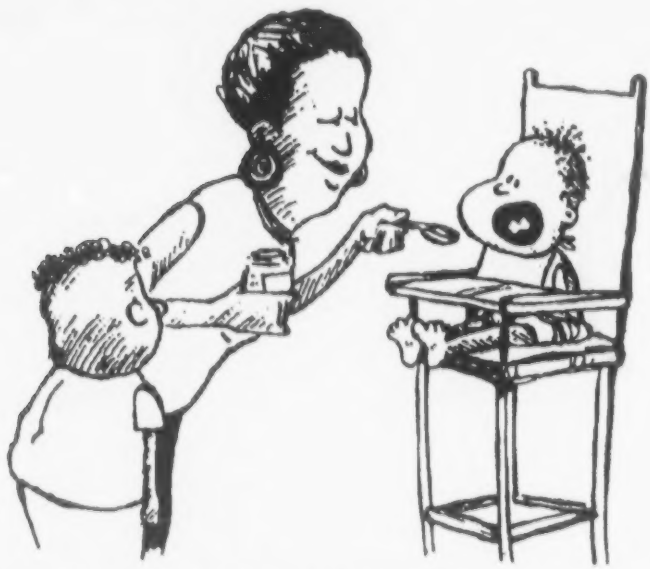


*Anno's Math Games* by Mitsumasa Anno. Demonstrates concepts of multiplication, sequence, measurement, and direction. Discover the answers to given problems by looking closely at accompanying illustrations.

*What Is Symmetry?* by Mindel and Harry Sitomer. Explains symmetry and gives examples of symmetry in nature and manufactured products. Explores ways to test for line and point symmetry, and also covers plane symmetry. Gives instructions for making symmetrical patterns.

## Ages 8-10

*The Problem Solvers* by Nathan Aaseng. Discover the importance of problem solving by looking at some successful products and companies. The inventions described in this book were created as solutions to problems. Discusses John Deere, Jacuzzi, Gerber, Polaroid, Evinrude, and others.



*Anno's Hat Tricks* by Mitsumasa Anno and Akihiro Nozaki. Presents deductive reasoning through illustrated word puzzles. The reader must look at the "if" and determine the "then."

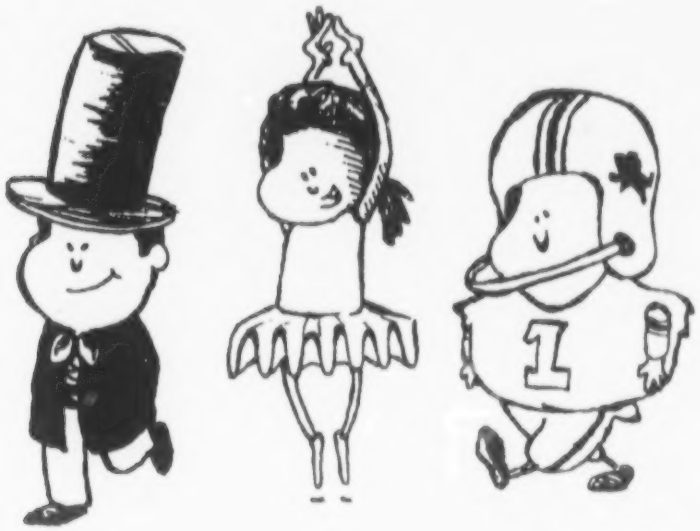
*Anno's Mysterious Multiplying Jar* by Mitsumasa and Masaichiro Anno. Helps the reader visualize factorials through a story. Shows the use of the exclamation point: 3! for example, means 3 X 2 X 1. This tale goes all the way to ten. Also examines factorials as a means of determining alternate orders of a set.

# Books for Children to Read by Themselves

## Ages 4-6

*Big Ones Little Ones* by Tana Hoban. Photos of mature animals with their young illustrate the concept of big and little. Lists different kinds of animals in the back of the book.

*The Fancy Dress Party Counting Book* by John Patience. Shows groups of children in costume arriving at a birthday party. Includes numerals one through ten with children and counting dots. Includes simple story-problem questions.




*Shapes, Shapes, Shapes* by Tana Hoban. A photographic collection of familiar objects seen every day. Shapes to look for are in the beginning of the book, and appear throughout the photos. Includes arcs, circles, hearts, stars, ovals, squares, triangles, and more.

## Ages 6-8

*How Much Is a Million?* by David M. Schwartz. Marvelosissimo, the mathematical magician, takes a journey and defines large numbers using familiar things. Depicts concepts of million, billion, and trillion through captivating illustrations.

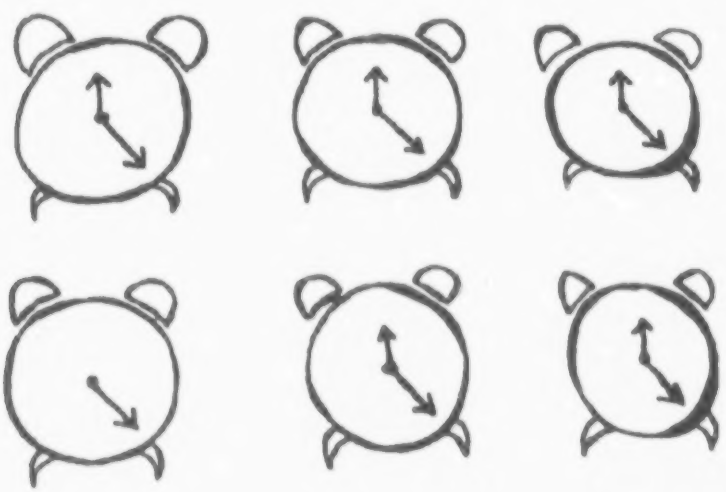
*Meet the Computer*, by Seymour Simon. Discusses and explains a computer and how it works. Uses cartoons to illustrate the text.

*Dollars and Cents for Harriet*, by Betsy Maestro. Harriet is a hard-working elephant trying to earn enough money for a kite. Follow her and learn how different coins add up to make one dollar.

## Ages 8-10

*The I Hate Mathematics Book!* by Marilyn Burns. Learn math by having fun with games, puzzles, riddles, and magic tricks. Covers numerology, probability, symmetry, logic, fractions, multiplication, and more.

*Which One Is Different?* by Joel Rothman. Twenty-six puzzles that challenge the best observation skills. Each page contains a set of objects, and one object is different from the others. Covers a variety of difficulty levels.



*The Domino Book*, by Frederick Berndt. Outlines puzzles and games to play using dominoes. Gives rules and versions of games from simple to complex. Can be played by children and adults.

## Magazines

Also ask the librarian for the following magazines for children:

*3-2-1 Contact*

*Cricket*

*Current Science*

*Highlights for Kids*

*National Geographic for Kids*

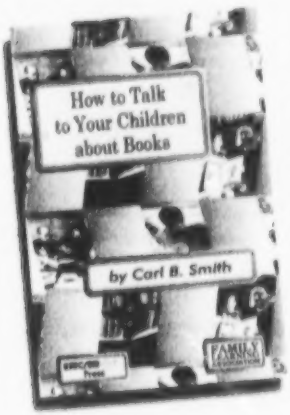
*Scholastic Dynamath*

*Science Weekly*

*Science World*

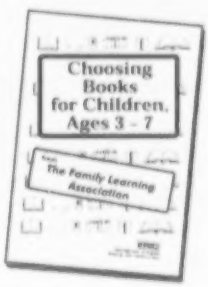
*Shoe Tree*

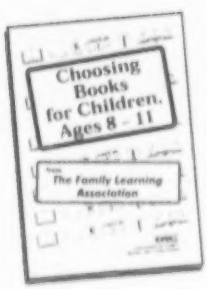
# If you found this book useful, please try these other helpful books !




**How to Talk to Your Children about Books** *by Carl B. Smith*
Start a conversation that will last a lifetime. This book teaches you five easy techniques to prompt book discussions, guidelines for selecting books, how to make it a two-way exchange, plus motivation, values, and making it fun!

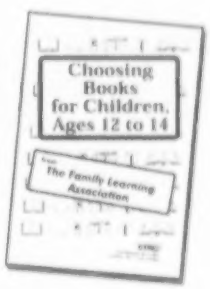
**Choosing Books for Children, Ages 3 to 7**
Use this resource to appeal to a variety of interests in your kindergarten to primary-age children. Filled with great tips for keeping book conversations going, this book pinpoints a vast array of age-appropriate reading materials.



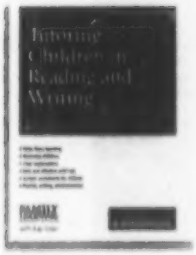

**Choosing Books for Children, Ages 8 to 11**
Quick summaries of a huge collection of titles will make it easy to provide good reading for your pre-teens. Top-notch authors, relevant themes, and sensitive issues make this a good companion at the library or bookstore.

**Choosing Books for Children, Ages 12 to 14**
Let literature open up discussion about some of the difficult issues your teen is experiencing. Includes a special section on communicating about books though writing and journaling.




For information about these and other helpful books
**The Family Learning Association**
3925 Hagan Street, Suite 101, Bloomington, Indiana 47401
**1.800.759.4723** www.kidscanlearn.com

## Other Resources Available



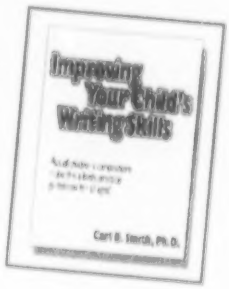
### Tutoring Children in Reading and Writing

**Book 1: Kindergarten**
**Book 2: Grades 1-2**

These guidebooks use a hands-on approach to helping children improve essential skills. Using easy and effective activities, they focus on the building blocks of reading and writing with sample worksheets that focus on letter recognition, spelling, phonics, and comprehension.

### Improving Your Child's Writing Skills

Using actual children's compositions, this fun guidebook takes kids through the entire process of writing, from Pre-Writing and Drafting to Revising and Proofreading. The practical work sheets form a framework to hone the skills of any young writer.




## Helping Children to Learn SERIES

***Improving Reading and Learning***

***Phonics and Other Word Skills***

***Reading to Learn***

***Creating Life-Long Readers***

***The Self-Directed Learner***

For information about these and other helpful books
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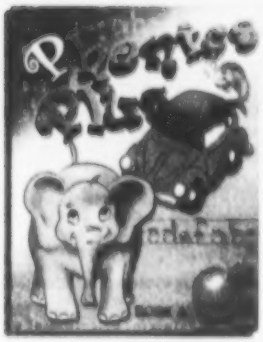
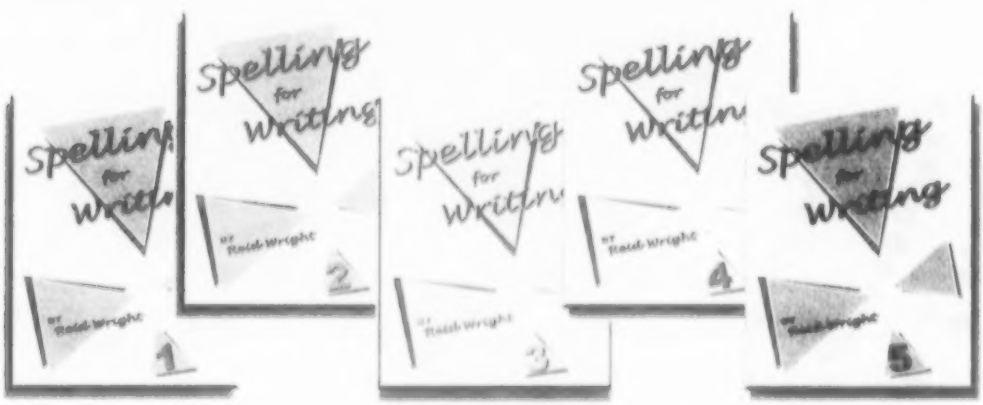
**1.800.759.4723** www.kidscanlearn.com



## Phonics Plus, Books A, B, and C

***developed by The Family Learning Association***

These three books help children learn to discriminate sound-symbol correspondences by listening, saying, seeing, and writing letters of the alphabet with illustrated writing and fill-in-the-blank activities. Book A is appropriate for kindergartners and first-graders. Book B is for 1st–2nd grade, and Book C is for 2nd–3rd grade.




## Spelling for Writing, Books 1 – 5

This series of student workbooks provides all the direction needed to lead kids through the basic spelling patterns of English. By following the weekly lesson plans, you can improve spelling accuracy and the clarity of all written messages. Full of delightful line drawings that illustrate the words being learned, each book is crafted for the age-appropriate level.

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**Learning Activities for Infants and Toddlers**

*By Stan Wonderley*

This collection of interactions with your child is easy to use, appealing, and practical. Each stage of development is documented with what milestones to expect, and guidelines for raising a smarter, happier, healthier child. Includes 19 activities that parents can use before a baby is born, 80 Infant activities, and 75 activities for Toddlers.

**Preschool Learning Activities**

*by Stan Wonderley*

Here's a complete set of activities to help develop skills in auditory and visual discrimination, color recognition, counting, hand-to-eye coordination, creativity, small muscle control, thinking, vocabulary, and more. With easy-to-follow instructions, the over 170 different interactions in this book will help you do an even better job of developing your child's intellect and learning readiness.

**Success Starts Early!**

*By Stan Wonderley*

Here's a book of ideas that may change your perspective on child-rearing by focusing on how to build success in these areas: academic skills, reading skills, social skills and values, a nurturing environment, and career awareness. Stan's down-to-earth style and helpful hints are well-supported and practical, and draw on his almost 50 years of education experience.



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# NOTES

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Side B: Bill Brescia, Brian Strum, Rich Fish, Martressa Graves, Sonja Rasmussen, and Carol Carter

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